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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/643,909	08/20/2003	Elizabeth Foster	EI-2-03-009	4754

7590 10/17/2005

Lawrence R. Fraley  
Hinman,Howard & Kattell  
700 Security Mutual Building  
80 Exchange Street  
Binghamton, NY 13901

EXAMINER
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HARAN, JOHN T

ART UNIT	PAPER NUMBER
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1733

DATE MAILED: 10/17/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

10/643,909

Applicant(s)

FOSTER ET AL.

Examiner

John T. Haran

Art Unit

1733

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 22 September 2005.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 19-30 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 19-30 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |   |   |
|---|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)                        | 4) <input type="checkbox"/> Interview Summary (PTO-413)                     |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)    | Paper No(s)/Mail Date. _____  |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date _____   | 6) <input type="checkbox"/> Other: _____                                    |

### DETAILED ACTION

1. This office action is in response to the amendments and remarks filed on 9/22/05.

#### ***Claim Rejections - 35 USC § 103***

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 19-30 are rejected under 35 U.S.C. 103(a) as being unpatentable over Shelnut et al (U.S. Patent 6,899,829) optionally in view of Boyko et al (U.S. Patent 6,212,769).

Shelnut et al is directed to a method for making a circuitized substrate wherein the substrate layer of a printed circuit board is immersed in a solution including conductive polymer and a tin-palladium seed material, removing the substrate from the solution and rinsing and drying it and then the substrate is plated with copper to form a circuit element (Column 7, lines 35-38; Column 11, line 11 to Column 12, line 9; Column 14, lines 30-34).

Shelnut et al is silent towards the substrate of the printed circuit board being a dielectric polymer layer, however it is well known and conventional in the printed circuit board art for the substrate material to be a dielectric polymer layer, as shown for example in optionally cited Boyko et al (Column 5, line 63 to Column 6, line 20). It

Art Unit: 1733

would have been obvious to one of ordinary skill in the art at the time the invention was made to apply the method of Shelnut et al to a conventional substrate material for printed circuit boards, such as dielectric polymers.

Shelnut et al teaches electroplating the copper on the substrate but is silent towards electrolessly plating the copper, however it is well known and conventional in the art to electrolessly plate a circuit board with copper, as shown for example in optionally cited Boyko et al (Column 7, lines 63-67). One skilled in the art would have readily appreciated that it is well known and conventional in the art that electroplating and electroless plating are obvious alternate expedients and it would have been obvious to form the copper plating a conventional substrate material for printed circuit boards, such as dielectric polymers, using either method in the method of Shelnut et al.

Regarding claim 20, it is well known and conventional for PTFE (TEFLON) to be the substrate material of a printed circuit board, as shown for example in optionally cited Boyko et al (Column 6, lines 15-20).

Regarding claims 21, Shelnut et al teaches that the adhesion promotion layer is formed from a solution of conductive polymer including pyrrole, aniline and thiophene (Column 7, lines 3-6).

Regarding claim 22-23, Shelnut et al also teaches having tin-palladium seed material in the solution (Column 7, line 38) and one skilled in the art would have readily appreciated it would have been within the purview of one skilled in the art to determine the necessary proportions of monomer and solution to obtain the desired result.

Art Unit: 1733

Regarding claims 24-25, Shelnut et al teaches adding an oxidant to the solution, such as sodium persulfate (Column 7, lines 8-19). It is noted that the other listed oxidants are well known and conventional and it would have been obvious to use any of them in the method of Shelnut et al, as modified above.

Regarding claim 26-27, it would have been within the skill of the ordinary artisan to plate a copper layer of the desired thickness and it would have been within the purview of one skilled in the art to determine the necessary thickness of the copper plating.

Regarding claim 28, it would have been within the ordinary skill of the skilled artisan to determine the necessary temperature of the solution needed to adequately create an adhesion promoting layer and it would have been obvious to utilize routine experimentation to determine the temperature parameters of the solution.

Regarding claim 29, Shelnut et al teaches plating and bonding multiple substrates together (Column 11, lines 23-30).

Regarding claim 30, Shelnut et al, as modified above, electrolessly plates and does not sputter.

### ***Response to Arguments***

4. Applicant's arguments filed 9/22/05 regarding Shelnut have been fully considered but they are not persuasive.

Shelnut teaches a combined solution of conductive monomer and seed material (See Column 7, lines 35-38).

Art Unit: 1733

Shelnut et al is silent towards the substrate of the printed circuit board being a dielectric polymer layer such as PTFE, however it is well known and conventional in the printed circuit board art for the substrate material to be a dielectric polymer layer such as PTFE, as shown for example in optionally cited Boyko et al (Column 5, line 63 to Column 6, line 20). It would have been obvious to one of ordinary skill in the art at the time the invention was made to apply the method of Shelnut et al to a conventional substrate material for printed circuit boards, such as PTFE.

Shelnut et al teaches electroplating the copper on the substrate but is silent towards electrolessly plating the copper, however it is well known and conventional in the art to electrolessly plate a circuit board with copper, as shown for example in optionally cited Boyko et al (Column 7, lines 63-67). One skilled in the art would have readily appreciated that it is well known and conventional in the art that electroplating and electroless plating are obvious alternate expedients and it would have been obvious to form the copper plating a conventional substrate material for printed circuit boards, such as dielectric polymers, using either method in the method of Shelnut et al.

### ***Conclusion***

5. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP

Art Unit: 1733

§ 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to John T. Haran whose telephone number is (571) 272-1217. The examiner can normally be reached on M-Th (8 - 5) and alternate Fridays.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Tom Dunn can be reached on (571) 272-1171. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Art Unit: 1733

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

A handwritten signature in black ink, appearing to read "John T. Haran". The signature is fluid and cursive, with the first name "John" being more prominent.

John T. Haran  
Primary Examiner  
Art Unit 1733